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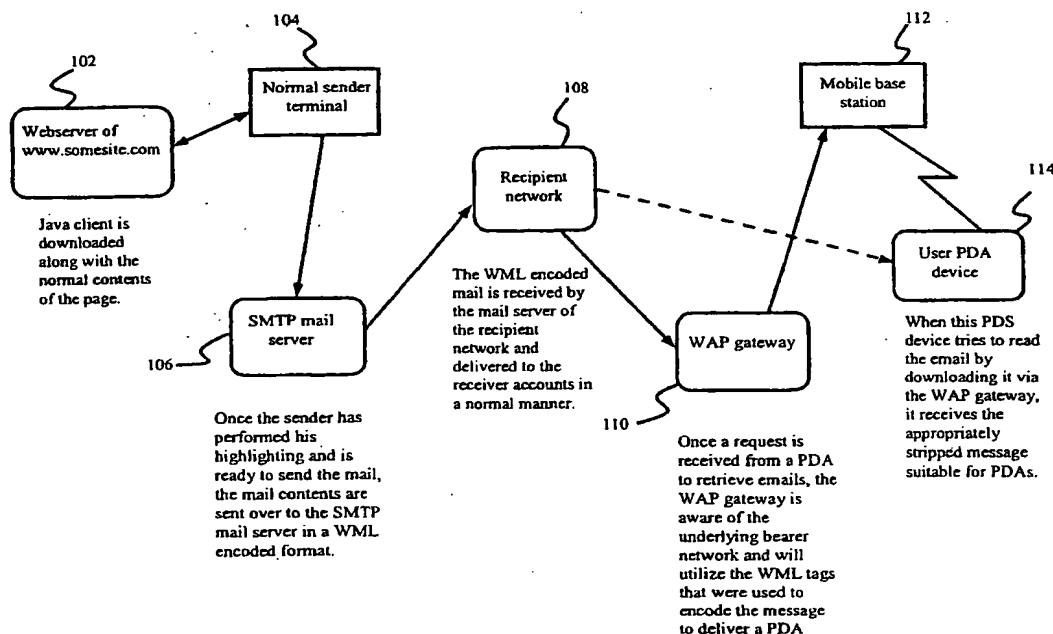
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(54) Title: **A SELECTIVE MESSAGE CONTENT RETRIEVAL AND DELIVERY MESSAGING SYSTEM**



(57) Abstract: A system for communicating documents to a wireless device is disclosed. The system includes means for receiving a first document from a sender, and means for identifying a portion of the first document that is highlighted. The system further includes means for sending at least the portion to a receiver.

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## A SELECTIVE MESSAGE CONTENT RETRIEVAL AND DELIVERY MESSAGING SYSTEM

### FIELD OF INVENTION

- 5 The invention relates generally to message retrieval and delivery. In particular, the invention relates to message retrieval and delivery for wireless devices.

### BACKGROUND

- 10 Recently, people have become increasingly dependent on e-mail services, remote access to corporate Intranets, and other Internet-based services. As a result, mass-market wireless devices such as mobile handphones, Personal Digital Assistants (PDAs), and the like wireless devices having wireless communication capabilities that provide mobile access to these resources have become increasingly popular and useful tools.
- 15 To provide a worldwide open standard enabling the delivery of Internet-based services to mass-market wireless devices, various industry leaders within the wireless devices market formed the Wireless Application Protocol Forum (WAP forum). In 1998, the WAP Forum published technical specifications for application and content development, and product interoperability based on Internet technology and
- 20 standards. By complying with the WAP specifications, wireless device manufacturers, network operators, content providers and application developers can provide Internet based products and services that are interoperable.

- Also in 1998, the WAP forum published the specification for Wireless Markup Language (WML). WML is compliant with the specification for eXtensible Markup
- 25 Language (XML) published by the World Wide Web Consortium (W3C). XML is a programming language that provides means of describing and exchanging data in an open format.

Content providers and application developers use WML to optimize the display of, and interaction using, Web-based data on wireless devices. WML is optimized for

the delivery of Internet content to mass-market wireless devices such as mobile handphones, which have numeric keypads instead of full keyboards, and small screens. These wireless devices also have limited memory capacity, processing power, battery life and communication bandwidth. In the same manner that the programming language Hypertext Markup Language (HTML) has provided an open standard that has fueled the development of Internet applications and content for personal computers, WML is designed to be an industry standard that encourages the development of Internet applications and content for wireless devices.

Currently, in a typical e-mail messaging system, irrespective of the type of media or bearing network the e-mail messaging system is accessed from, a user can download all the messages and read these selectively. Alternatively, the user can download all the headers and then retrieve only those messages that are desired. As a further alternative, the user can download only an initial portion, for example the first 100 bytes, of the message and later determine whether to read the message or not. The last two alternatives are only available to the user if the e-mail messaging system to which the user is connected uses the Internet Messaging Access Protocol, or IMAP.

With current e-mail messaging system, there are two possible methods for a sender who would like to send information relating to a Web site which the sender has accessed and read to a receiver via e-mail to do so. A first method involves the sender sending the full HTML contents of the relevant Web page from the Web site as an attachment to the receiver. This is typically the case when both the sender and receiver use HTML-enabled mail readers. A second method involves the sender sending only a link for the Web site in plain ASCII format to the receiver. The receiver may subsequently access the Web site to read the relevant Web page using the link.

However, neither of these methods is suitable for devices that access the e-mail messaging system via wireless media. While the second method seems more efficient, the receiver in trying to actually read the relevant page using the link via a wireless device with constraints such as limited memory capacity and communication bandwidth would have to expend more time and effort subsequently. This method is therefore just as inefficient as, if not more inefficient than, the first

method insofar as achieving the objective of allowing the receiver to read the document that the sender intended in light of the constraints on the wireless device.

There is therefore a need for a messaging system that utilizes the current framework of wireless media and e-mail messaging systems for suitably providing e-mail

5 messaging to wireless devices in consideration of constraints such as limitations in  
memory capacity and communication bandwidth thereof.

## SUMMARY

10 In accordance with a first aspect of the invention, a method of communicating documents to a wireless device is provided. The method includes the steps of receiving a first document from a sender, and identifying a portion of the first document which is highlighted. The method further includes the step of sending at least the portion to a receiver.

15 In accordance with a second aspect of the invention, a system for communicating documents to a wireless device is provided. The system includes means for receiving a first document from a sender, and means for identifying a portion of the first document that is highlighted. The system further includes means for sending at least the portion to a receiver.

20 In accordance with a third aspect of the invention, a method of receiving documents at a wireless device is provided. The method includes the step of determining a priority setting for the wireless device. The method also include the step receiving at least an identified portion of a first document which is highlighted by, when the priority is set, receiving a second document constructed using the portion, and when the priority setting is not set, receiving the first document.

25

## BRIEF DESCRIPTION OF DRAWINGS

Embodiments of the invention is described hereinafter with reference to the drawings, in which:

Figure 1 is a schematic diagram of a scenario in which a selective message content retrieval and delivery system according to a preferred embodiment of the invention is implemented;

Figure 2 shows a number of screenshots, including those from displays of a wireless device and a conventional terminal from which a receiver can read an e-mail message processed according to the system shown in Figure 1;

Figure 3 is a flowchart of processes that occur when a sender of an e-mail message sends the message to the system shown in Figure 1;

Figure 4 is a flowchart of processes that occur when a receiver of the message of Figure 3 retrieves the message from the system shown in Figure 1;

Figure 5 is a flowchart of a process that occurs when the sender selects a document and highlights a portion of the document for sending to the receiver via the system shown in Figure 1;

Figure 6 is a flowchart of a process that occurs when the receiver retrieves the highlighted document using the wireless device of Figure 2 via the system shown in Figure 1;

Figure 7 is a flowchart of a process that occurs in the wireless device shown in Figure 1 in relation to priority settings thereof; and

Figure 8 is a flowchart of a process that occurs in a WAP Gateway shown in Figure 1 in relation to priority settings of the wireless device, both shown in Figure 1.

## DETAILED DESCRIPTION

To meet the need for a messaging system that utilizes the current framework of wireless media and e-mail messaging systems for suitably providing e-mail messaging to wireless devices in consideration of constraints such as limitations in memory capacity and communication bandwidth thereof, a messaging system which is capable of selective message content retrieval and delivery is provided. The type of message content retrieved by or delivered to the wireless devices depends on the

type of wireless devices from which the selective message content retrieval and delivery messaging system is accessed.

A selective message content retrieval and delivery messaging system (hereinafter generally known as the system) according to a preferred embodiment of the invention

5 is shown in Figure 1. Figure 1 provides a schematic diagram of an exemplary

messaging system in which an e-mail message is created by a sender at terminal 104 and delivered to a receiver's wireless device 114 by the system via a gateway server 110 that provides access means to a service that provides wireless connection to the wireless device 114. Preferably, the e-mail message is based on WML encoding, the  
10 gateway server 110 is a WAP gateway server 110, and the wireless connection is WAP compliant.

There are two possible scenarios of use to which the system can apply. In a first scenario, while trying to access a Web site 102, the sender from the terminal 104 (for example, a desktop computer) is provided with an interface which equips the sender  
15 with various highlighting and editing tools. The interface is preferably a Java applet that works with a conventional e-mail composer. With the help of these highlighting and editing tools, the sender is able to highlight various portions of any Web page that the sender is reading. When the sender finds a particular Web page on the Web site 102 which is interesting and would like to recommend to the receiver, the sender  
20 can via the system send the Web page to the receiver using an e-mail message after the sender highlights the salient points and sections on the Web page.

After highlighting the Web page, the sender clicks a "Send e-mail" button on the Java applet which initiates the preparation of the e-mail message containing the highlighted Web page. The e-mail message is prepared by being encapsulated with  
25 WML using an e-mail client invoked by the clicking of the "Send e-mail" button. The e-mail client then appropriately tags the sections of the e-mail message that have been highlighted. For example, the definition of a font size for the highlighted sections of the e-mail message which are different from the rest of the non-highlighted sections of the e-mail message can be used as means of tagging. As long  
30 as components of the system are all compliant with predefined and/or predetermined means of tagging, the system is able to provide selective message content retrieval

and delivery. The e-mail message is subsequently delivered in the conventional way using preferably the Simple Mail Transfer Protocol, or SMTP, and involves conventional equipment such as an SMTP mail server 106 with which the e-mail client communicates, conventional networks such as the Internet, and the receiver's  
5 bearer network.

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When the receiver downloads e-mail messages, the receiver can do so in two ways. Firstly, the receiver can download e-mail messages via a bearer network that does not provide a WAP compliant wireless connection through a WAP gateway. For example, the receiver may connect to the receiver's STMP mail server using a  
10 conventional physical telephone connection and a modem. Alternatively, the receiver can download e-mail messages via a bearer network 108 that provides connection to the WAP gateway 110. The receiver then has to connect to the WAP gateway 110 using a WAP compliant wireless connection provided by a mobile base station 112 where the communication bandwidth is provided at a premium cost.

15 In the first situation, with the help of an interface application or "plug-in" which enables the receiver's e-mail client on a messaging device which does not provide wireless communication, for example a desktop computer, to decode WML e-mail messages, the receiver is able to read e-mail messages using a desktop computer having the plug-in. However, the email messages with the highlighted parts appear  
20 on the display of the desktop computer the same way these e-mail messages were composed and highlighted by the sender.

In the second situation, because the receiver is connectable to the WAP gateway 110, the receiver therefore uses the wireless device 114 to receive the e-mail messages. When the WAP gateway 110 detects that an e-mail message being retrieved or  
25 downloaded is encoded in WML, the WAP gateway 110 communicates with the receiver's wireless device 114 to allow the receiver to have the option of downloading only the highlighted parts, in this case of the Web page, in the e-mail message, thereby conserving bandwidth, or the entire Web page.

In a second scenario, the sender wants to send an e-mail message having as part of  
30 the e-mail message content which the sender wants the receiver to read immediately

or that which the sender thinks is more important than the other parts of the e-mail message. The sender thus highlights that message content using the Java applet. In such a scenario, when the receiver downloads the e-mail message via the WAP gateway 110, the receiver has the option to zoom into the gist or focus on the message content without reading the entire e-mail message by selectively  
5 downloading only the highlighted part of the e-mail message, or download the entire e-mail message.

Figure 2 shows a number of screenshots for illustrating the differences between e-mail messages shown on displays of the wireless device 114 and the desktop  
10 computer from which the receiver may read the same e-mail message which the sender composes and sends out. On a screenshot 202 of the terminal 102, the sender's composition is shown where the sender has highlighted parts of the composition using boldface and underline 204. The boldfaced and underlined message content forms that part of the e-mail message which the sender intends for  
15 the receiver to read first, irrespective of whether the e-mail message contains a Web page or a message prepared by the sender. Therefore, on a screenshot 208 of the wireless device 114, what the receiver would read if the receiver chooses to selectively download the e-mail, is shown as containing only the message content without the boldface and underline 204.

20 In a screenshot 206 of the display on the desktop computer, the entire e-mail message in the form that the sender has created is shown. This is what the receiver would receive and read if the receiver opts to download e-mail messages via a bearer network that does not provide a WAP compliant wireless connection through a WAP gateway.

25 When using the system for selective message content retrieval and delivery, there are a number of advantages. One advantage lies in the system allowing the receiver to download or read e-mail messages selectively with the selectivity based on marked or highlighted message content. Another advantage lies in the system allowing the receiver to read the same message with different levels of content selectivity over  
30 different bearer networks, for example, viz, Ethernet, GSM, GPRS, CDMA, etc.



A further advantage is that when using the system, message content selectivity can be specified and prioritized to various degrees, viz, keyword highlighting, paragraph highlighting and full length coverage of all e-mail message with different colors or fonts or depiction, depending on the medium from which the e-mail message is accessed, for each.

An even further advantage lies in the system allowing the receiver to look for/query the WAP gateway 110 for selected highlighted key word even before the receiver retrieves or downloads any headers or message content.

A still further advantage is that the system provides selective message content retrieval and delivery independent of the bearer network. Therefore, the system can be implemented using Ethernet, PSTN, TDMA, GSM, GPRS, CDMA, etc.

A yet further advantage is that the system utilizes WML and WAP to provide selective message content retrieval and delivery, and thus provides unprecedented levels of interoperability with other systems.

To provide operational details of the system, Figures 3 to 8 are referenced for providing illustrations of processes and steps therein using flowcharts. Figure 3 is a flowchart of processes that occur when the sender creates an e-mail message and sends the e-mail message to the receiver via the system.

In a process 302, the sender enters the system, and sends a request to a Web site "www.somesite.com" on the Internet using the terminal 104 in a next process 304. The Web site www.somesite.com in response sends a Web page to the sender in a process 306. At this point, the Java applet is also provided to the terminal 104 along with the Web page so that the sender while reading the Web page can in a next process 308 highlight the salient parts of the Web page. After that, the sender is presented with a choice of sending the Web page in an e-mail message by using an e-mail composer in a process 310. The sender later decides to send the Web page to the receiver in an e-mail message and prepares such an e-mail message and clicks "Send e-mail" on the e-mail composer in a process 312. The Java applet encodes the e-mail message in WML with STMP headers in a next process 314.

The terminal 104 makes a connection with the SMTP mail server 106 in a process 316. The SMTP mail server 106 responds with a verification in a process 318 so that the terminal 104 continues with the delivery of the e-mail message. The terminal 104 in a next process 320 delivers the WML encoded e-mail to the SMTP mail server 106. The SMTP mail server 106 then uses standard SMTP procedures and the headers of the e-mail message to be delivered to determine the mail server of the bearer network 108 in a step 322. The SMTP mail server 106 connects to the mail server of the bearer network 108 in a process 324, and in response, the mail server of the bearer network 108 provides verification in a next process 326. After receiving the verification, the SMTP mail server 106 delivers the WML encoded e-mail message to the mail server of the bearer network 108 in a process 328, which is then delivered to the receiver's mailhost in a next process 330 where the WML encoded e-mail message is stored until the receiver retrieves the e-mail message using the wireless device 114.

Figure 4 is a flowchart of processes that occur when the receiver subsequently retrieves the WML encoded e-mail message from the system. The receiver first enters the system in a process 402, and using the wireless device 114 connects to the WAP gateway 110 via the mobile base station 112 in a next process 404. In response, the WAP gateway 110 offers to the wireless device 114 all the valid services in a process 406. The wireless device 114 communicates requests to the WAP gateway 110 in a process 408, including a request for e-mail service, depending on the type of services to which the receiver has subscribed for the wireless device 114. The WAP gateway 110 then determines the receiver's mailhost from a profile of the receiver's subscription details in a process 410 and sends a request to the receiver's mailhost in a next process 412 for establishing a connection. The receiver's mailhost in response to the request by the WAP gateway 110 requests for authentication from the WAP gateway 110 in a process 414. To this request, the WAP gateway 110 sends the authentication information in a process 418. The receiver's mailhost in a next process 418 downloads the receiver's e-mail messages to the WAP gateway 110. The WAP gateway 110 then checks if among the delivered e-mail messages there are any WML encoded e-mail messages in a process

420. If the WAP gateway 110 detects a WML encoded e-mail message, the WAP gateway 110 processes such an e-mail message in a process 422 by stripping the e-mail message of any WML tag based on any highlighting according to any priority setting previously set by the receiver. The WAP gateway 110 in a next process 424  
5 delivers only the highlighted part of the e-mail message originally composed by the sender to the wireless device 114 for the receiver to read.

Figure 5 is a flowchart of steps in a process that occurs when the sender prepares an e-mail message and highlights a part of the e-mail message for selective retrieval by or delivery to the receiver using the Java applet. In a step 502, the sender starts  
10 downloading the Web page from the Web site www.somesite.com on the Internet using the terminal 104 and at the same time receives the Java applet. After receiving the Web page, the process checks if an edit mode in the Java applet is enabled in a step 504. If the edit mode is not enabled, the process continuously loops back to the step 504 until the edit mode is enabled. Otherwise, the terminal 104 loads the Web  
15 page into the local memory in the terminal 104 in a step 506. The sender at this point may or may not edit or highlight the Web page and the process checks this in a step 508. If the Web page has not been changed, the process continuously loops back to the step 508 until the Web page is changed. Otherwise, the e-mail client on the terminal 104 processes the changes to the Web page by tagging the highlighted parts  
20 of the Web page in the local memory. The process subsequently checks if the sender wants to include the edited Web page into an e-mail message in a step 512, where the process continuously loops back to the step 512 if an "E-mail" button is not clicked by the sender. Otherwise, if the sender clicks on the E-mail button, the terminal 104 retrieves the Document Type Definition (DTD) from the Web site for WML for  
25 encoding the e-mail message in a step 514. In a next step 516 depending the types of highlighting provided by the sender, the Java applet inserts priority tags accordingly using the DTD from the Website for WML where the highlighted parts of the e-mail message are encoded using these tags.

In a further step 518, the WML encoded e-mail message is displayed on the terminal  
30 104 with the highlights. The process then checks if the "Send e-mail" button is clicked by the sender in a step 520, where if the button is not clicked, the process

continuously loops back to the step 520 until the sender clicks on the button.

Otherwise, the process continues to check if the sender wishes to make further changes in a step 522. If the sender wants to make further changes, the process returns to the step 512. Otherwise, the process continues with a step 524 in which

5 SMTP headers are inserted to the WML encoded e-mail message. After being inserted with the SMTP headers, the WML encoded e-mail message is delivered to the SMTP e-mail server 106 in a step 526.

Figure 6 is a flowchart of a process that occurs when the receiver wants to retrieve e-mail messages, including the highlighted e-mail message sent by the sender, using  
10 the wireless device 114. In a step 602, the receiver makes a connection to the receiver's mailhost through the WAP gateway 110 and the mobile base station 112 for retrieving e-mail messages resulting in the receiver's mailhost delivering the sender's e-mail messages to the WAP gateway 110. The WAP gateway in a step 604 invokes a WML data parser that searches for tags in WML within a document. The  
15 WAP gateway 110 checks if any delivered e-mail message is tagged in WML representing highlights provided by the sender in a step 606. For any e-mail message that is not tagged in WML according to the DTD for representing highlights, the WAP gateway 110 in a step 608 invokes a generic data handler that processes and prepares any e-mail message for delivery to the wireless device 114 in a next step  
20 610.

Otherwise, if the WAP gateway 110 processes the WML encoded e-mail prepared by the sender, the WAP gateway 110 in a step 612 invokes a WML e-mail DTD handler. The WML e-mail DTD handler is a module in the WAP gateway 110 that specifically looks for various tags in WML according to the DTD and processes the  
25 associated data accordingly. For example, if the WML e-mail DTD handler detects that one of the tags is "<FROM>" as typically used in the e-mail header field, and this tag is defined to be "font 12" size in the DTD, the WML e-mail DTD processes the associated data and outputs data having font size 12. Subsequently, the profile which contains the details of the receiver's subscription, including the priority  
30 settings previously set by the receiver for determining the type of e-mail messages in relation to the amount of message content to be received, is read in a step 614. The

WAP gateway 110 checks if there is any priority setting in a step 616, and if there is, the WAP gateway 110 further checks if the priority is set to "ALL" or "SPECIFIC" in a further step 618. If the priority setting is ALL, the WAP gateway 110 returns to the step 608 to provide the entire WML encoded e-mail message to the generic data handler. If the priority setting is SPECIFIC or there are no priority settings, the WAP gateway 110 in a step 620 maps the tags in WML in the WML encoded e-mail message to highlighted parts therein corresponding to the selective message content of the e-mail which the sender intends the receiver to read first.

The WAP gateway 110 then checks if there are any such highlights in the WML encoded e-mail message in a step 622, and where there isn't any highlight detected, the process ends in a step 624 where no message content is delivered to the wireless device 114. Otherwise, the WAP gateway 110 reconstructs in a step 626 an e-mail message having only the highlighted parts of the email message corresponding to the selected message content to be retrieved by or delivered to the receiver, and returns to the step 608.

Figure 7 is a flowchart of steps in a process that occurs at the wireless device 114 when the receiver wants to set the priority settings for receiving the type of message content in an e-mail message. The receiver first starts to connect to the WAP gateway 110 in a step 702 via the mobile base station 112 using the wireless device 114. The wireless device 114 then retrieves the profile, which contains the details of the receiver's subscription, from the WAP gateway 110 in a step 704. The wireless device 114 checks if the profile is available in a step 706, and if the profile is not available, the wireless device 114 in a further step 708 checks with the receiver if the receiver wants to create a new profile. If the receiver wishes to create a new profile, the wireless device 114 sends a request to the WAP gateway for a new profile in a step 710 and the wireless device 114 next returns to the step 704. Otherwise, the process ends in a step 720.

If the profile is available, the wireless device 114 in a further step 712 retrieves the profile data and displays the profile data on the wireless device 114 in a next step 714. The wireless device 114 subsequently checks if the sender has changed any data in a step 716, and if there is no change, the wireless device 114 checks with the

sender if the sender wishes to exit the process in a step 718. The process continuously loops back to the step 718 until the sender chooses to end the process, whereby the process ends in a step 720.

Otherwise, if the sender has changed the profile data, the wireless device 114 in a  
5 ~~step 722 sends the updated profile to the WAP gateway 110 and the process returns~~  
to the step 704.

Figure 8 is a flowchart of steps in a process that occurs at the WAP gateway 110 in response to changes made to the priority settings of the wireless device 114 by the receiver. The receiver by sending a request to change the priority setting to the WAP  
10 gateway 110 invokes the process in a first step 802. The WAP gateway 110 in a step 804 checks if the communication is a request to change the profile. If the communication is not a request to change the profile, the process continues to loop back to the step 804. Otherwise, the WAP gateway 110 in a step 806 checks if the receiver's profile is found in the WAP gateway 110 database. If the receiver's  
15 profile is not found in the database, the WAP gateway 110 notifies the receiver with options in a step 808. One option is to allow the receiver to terminate the process. The WAP gateway 110 then checks if the receiver has responded in a step 810, and continues to loop back to the step 810 if a response is not received from the receiver. Otherwise, the WAP gateway 110 further checks if the receiver wishes to create an  
20 account with the WAP gateway 110 in a step 812. If the receiver does not wish to create an account, the process ends in a step 826. Otherwise, the WAP gateway in a step 814 fills in default values into the newly created profile for the receiver.

However, if the receiver's profile is found in the database, the WAP gateway 110 in a step 816 retrieves the current profile data from the database. In a next step 818, the  
25 WAP gateway 110 sends the current profile data to the mobile base station 112 for onward transmission to the wireless device 114. The WAP gateway checks in a step 820 if the receiver has responded, and continuously loops back to the step 820 until a response is received. When the receiver responds, the WAP gateway 110 in a next step 822 checks if the current profile data sent to the receiver has been changed. If  
30 the current profile data is changed, the change is updated into the database in a step

824, and thereafter the WAP gateway 110 returns to the step 804. Similarly if the current profile data is not changed, the WAP gateway 110 returns to the step 804.

In the foregoing manner, a method and a system for providing selective message content retrieval and delivery is disclosed. A number of embodiments are described.

5 However, it will be apparent to one skilled in the art in view of this disclosure that numerous changes and/or modification can be made without departing from the scope and spirit of the invention.

**CLAIMS**

1. A method of communicating documents to a wireless device, said method including the steps of:

receiving a first document from a sender;

5 identifying a portion of said first document which is highlighted; and  
sending at least said portion to a receiver.

2. The method as in claim 1, further including the step of reading a priority setting for said receiver.

10

3. The method as in claim 2, wherein when priority is set, further including the step of constructing a second document using said portion.

4. The method as in claim 3, wherein said step of sending at least said portion to  
15 said receiver includes the step of sending said second document to said receiver.

5. The method as in claim 2, wherein when priority is not set, said step of sending at least said portion to said receiver includes the step of sending said first document to said receiver.

20

6. The method as in claim 1, wherein said step of identifying said portion which is highlighted includes the step of identifying said portion which is tagged using a markup language according to said highlighted portion of said first document.

25 7. The method as in claim 6, wherein said step of identifying said portion which is tagged using said markup language according to said highlighted portion of said first document includes the step of identifying said portion which is tagged with



inserted priority tags according to the document type definition (DTD) for said markup language.

8. The method as in claim 7, wherein said step of identifying said portion which is tagged with said inserted priority tags according to said DTD includes the step of identifying said portion which is tagged using wireless markup language (WML).

9. A system for communicating documents to a wireless device, including:  
means for receiving a first document from a sender;  
10 means for identifying a portion of said first document which is highlighted;  
and  
means for sending at least said portion to a receiver.

10. The system as in claim 9, further including means for reading a priority  
15 setting for said receiver.

11. The system as in claim 10, wherein when said priority is set, further including means for constructing a second document using said portion.

20 12. The system as in claim 11, wherein said means for sending at least said portion to said receiver includes sending said second document to said receiver.

13. The system as in claim 10, wherein when said priority is not set, said means for sending at least said portion to said receiver includes sending said first document  
25 to said receiver.

14. The system as in claim 9, wherein said means for identifying said portion which is highlighted includes means for identifying said portion which is tagged using said markup language according to said highlighted portion of said first document.

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15. The system as in claim 14, wherein said means for identifying said portion which is tagged according to said highlight portion of said first document includes means for identifying said portion which is tagged with inserted priority tags according to the document type definition (DTD) for said markup language.

10

16. The system as in claim 15, wherein said means for identifying said portion which is tagged with said inserted priority tags according to said DTD includes means for identifying said portion which is tagged using wireless markup language (WML).

15

17. A method of receiving documents in a messaging device, said method including the steps of:

determining a priority setting for said messaging device; and

receiving at least an identified portion of a first document which is

20 highlighted by, when said priority is set, receiving a second document constructed using said portion, and when said priority setting is not set, receiving said first document.

18. The method as in claim 17, wherein said step of receiving at least an  
25 identified portion of said first document which is highlighted includes the step of receiving at least an identified portion of a first document which is tagged using a markup language according to said highlighted portion of said first document.

19. The method as in claim 18, wherein said step of receiving at least an identified portion of a first document which is tagged using said markup language according to said highlighted portion of said first document includes the step of receiving at least an identified portion of a first document which is tagged with  
5 inserted priority tags according to the document type definition (DTD) for said markup language.

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20. The method as in claim 19, wherein said step of receiving at least an identified portion of a first document which is tagged with said inserted priority tags  
10 according to said DTD includes the step of receiving at least an identified portion of a first document which is tagged using wireless markup language (WML).

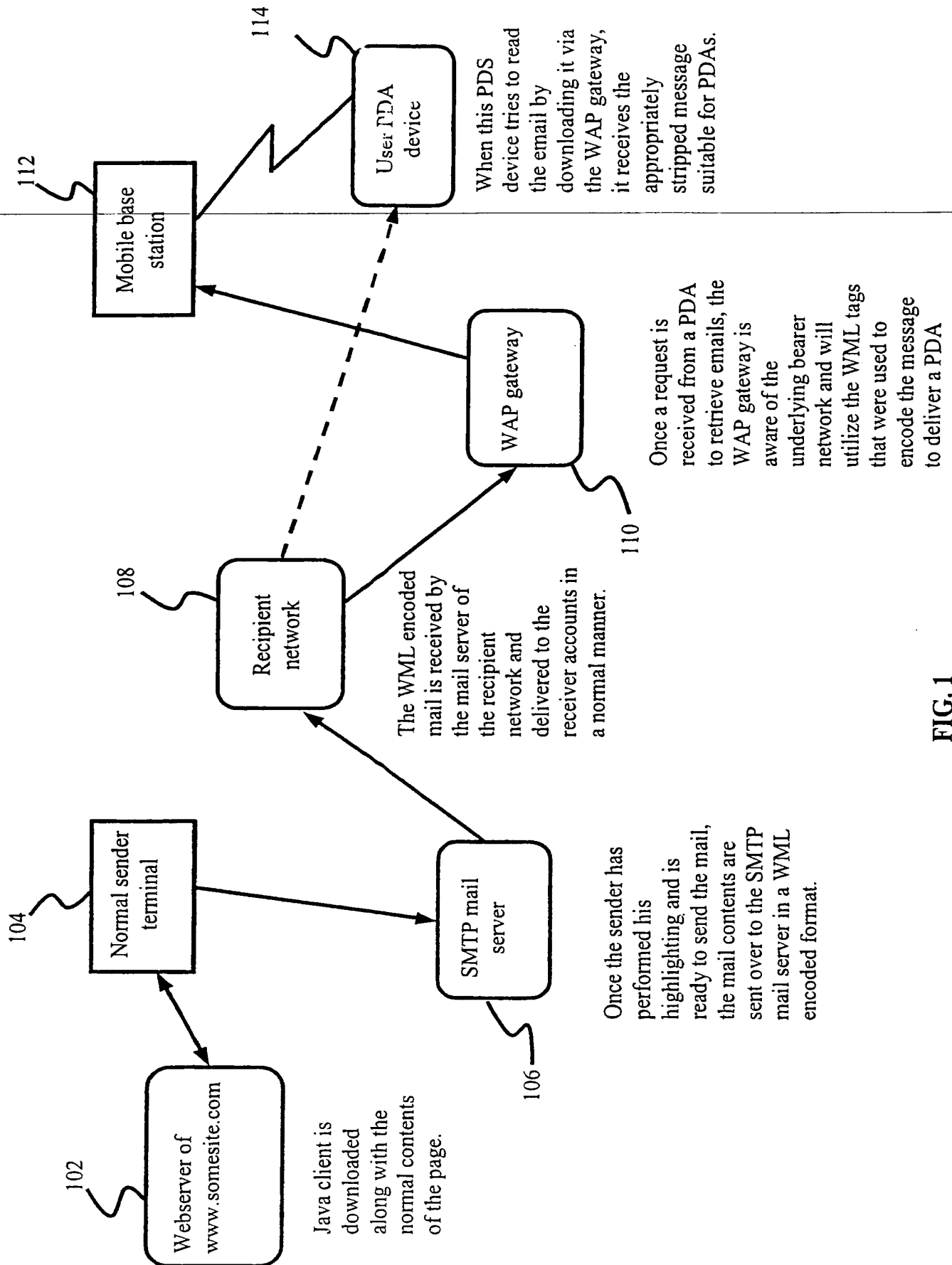


FIG. 1

## Sender's composition screen

To: [ipr-committee@org.net](mailto:ipr-committee@org.net)  
 From: [amlan@geektown.net](mailto:amlan@geektown.net)  
 Subject: Sample WML mail

Hi there

This is some sample text that I wanted to send you.

However, I find that you need to read this section more than the previous one. Thus, I feel that since you are holding the latest mobile device powered by the revolutionary tagging technology presented in this document, I am highlighting this section in accordance with that very document.

That's about it for now. I gotta go and stalk some of the guys with all the dough to get this thing off the ground.

Yours truly  
Amlan

## Receiver reading it on a desktop

To: [ipr-committee@org.net](mailto:ipr-committee@org.net)  
 From: [amlan@geektown.net](mailto:amlan@geektown.net)  
 Subject: Sample WML mail

Hi there.

This is some sample text that I wanted to send you.

However, I find that you need to read this section more than the previous one. Thus, I feel that since you are holding the latest mobile device powered by the revolutionary tagging technology presented in this document, I am highlighting this section in accordance with that very document.

That's about it for now. I gotta go and stalk some of the guys with all the dough to get this thing off the ground.

Yours truly  
Amlan

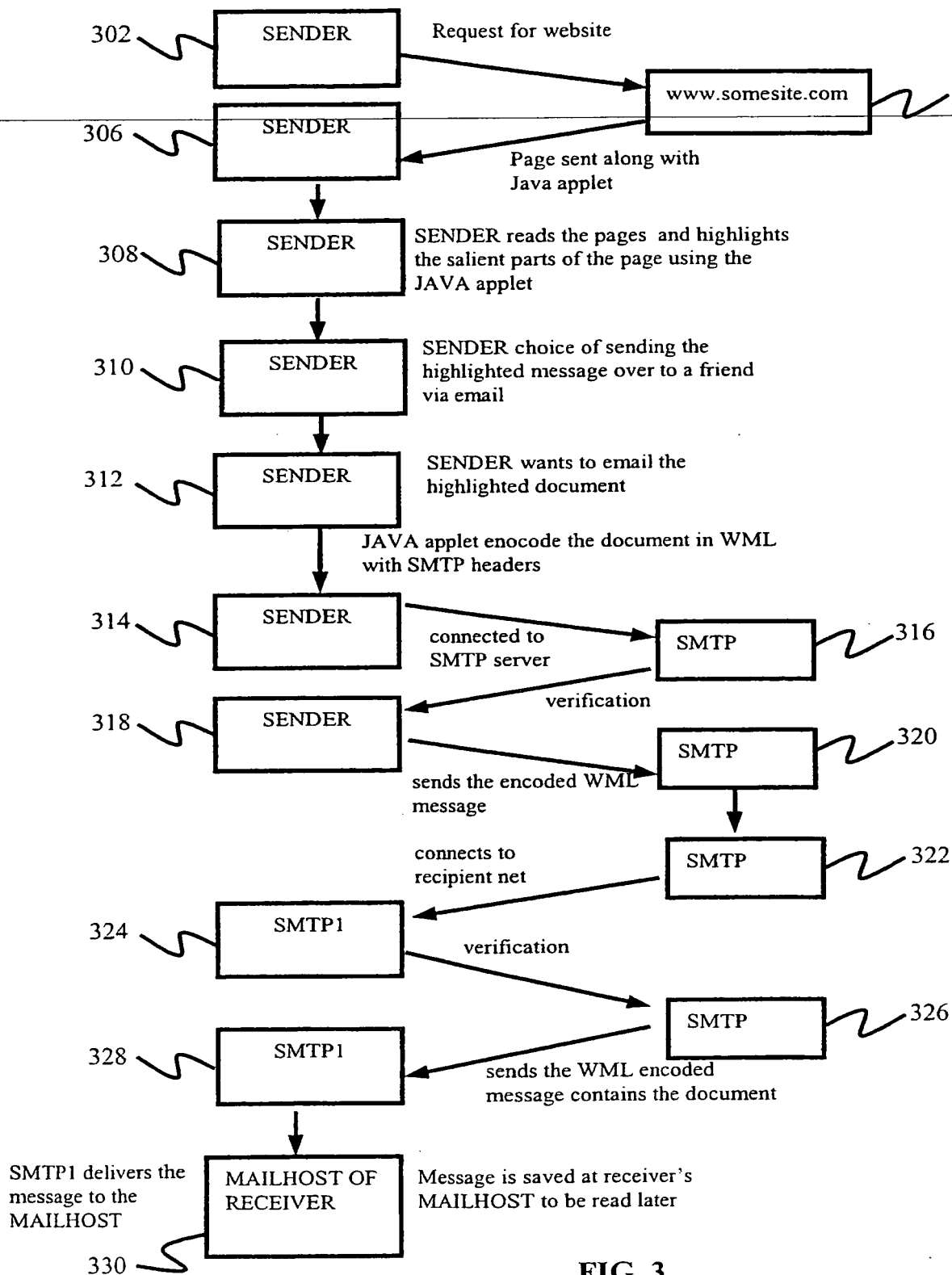
From: [amlan@geektown.net](mailto:amlan@geektown.net)

[..]  
however, I find that you need to read the section more than the previous one.

[..]  
I gotta go and stalk some of the guys with all the dough to get this thing off the ground.

Receiver reading it on a PDA

FIG. 2



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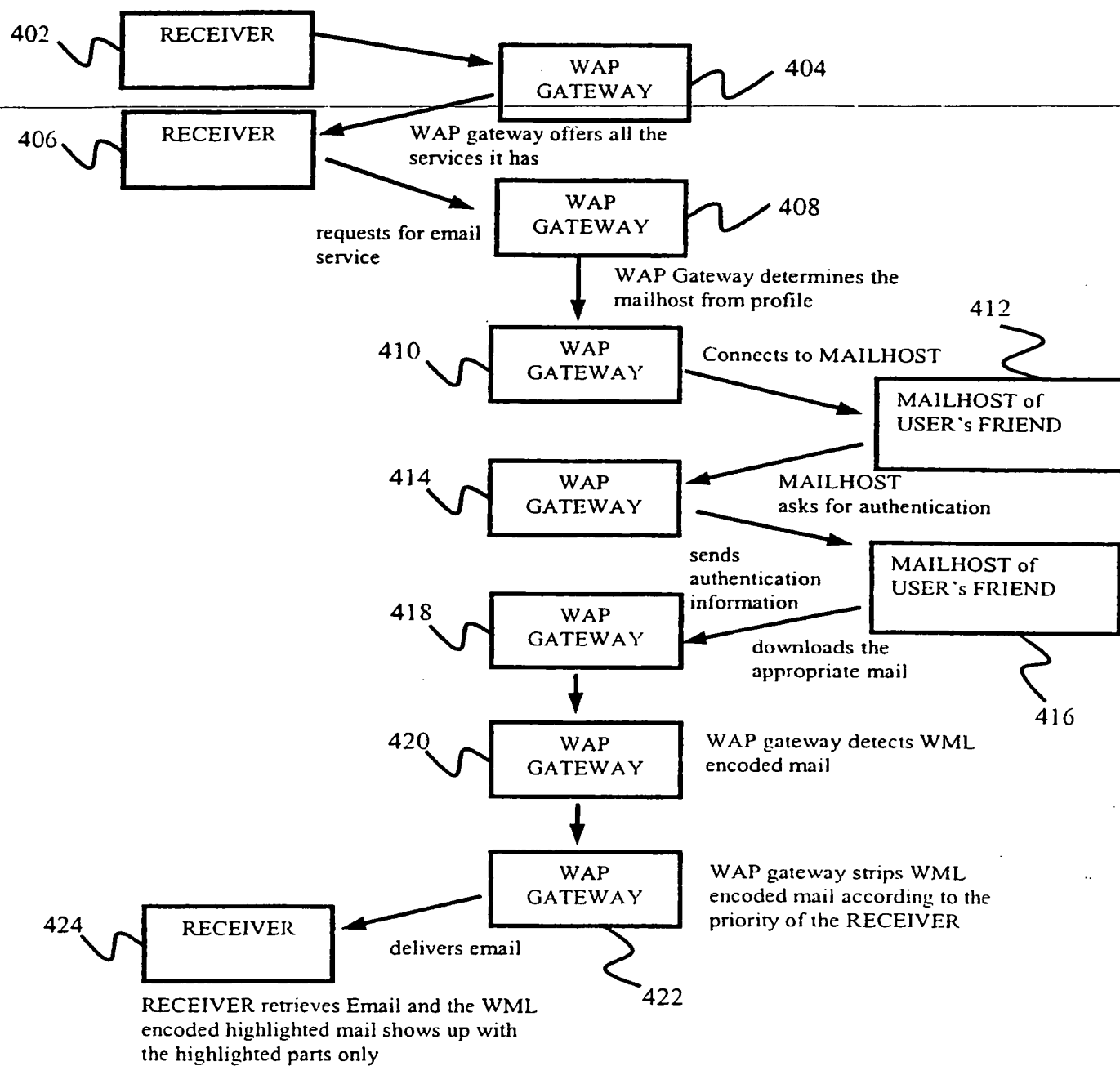


FIG. 4

## JAVA APPLET at WEBSITE

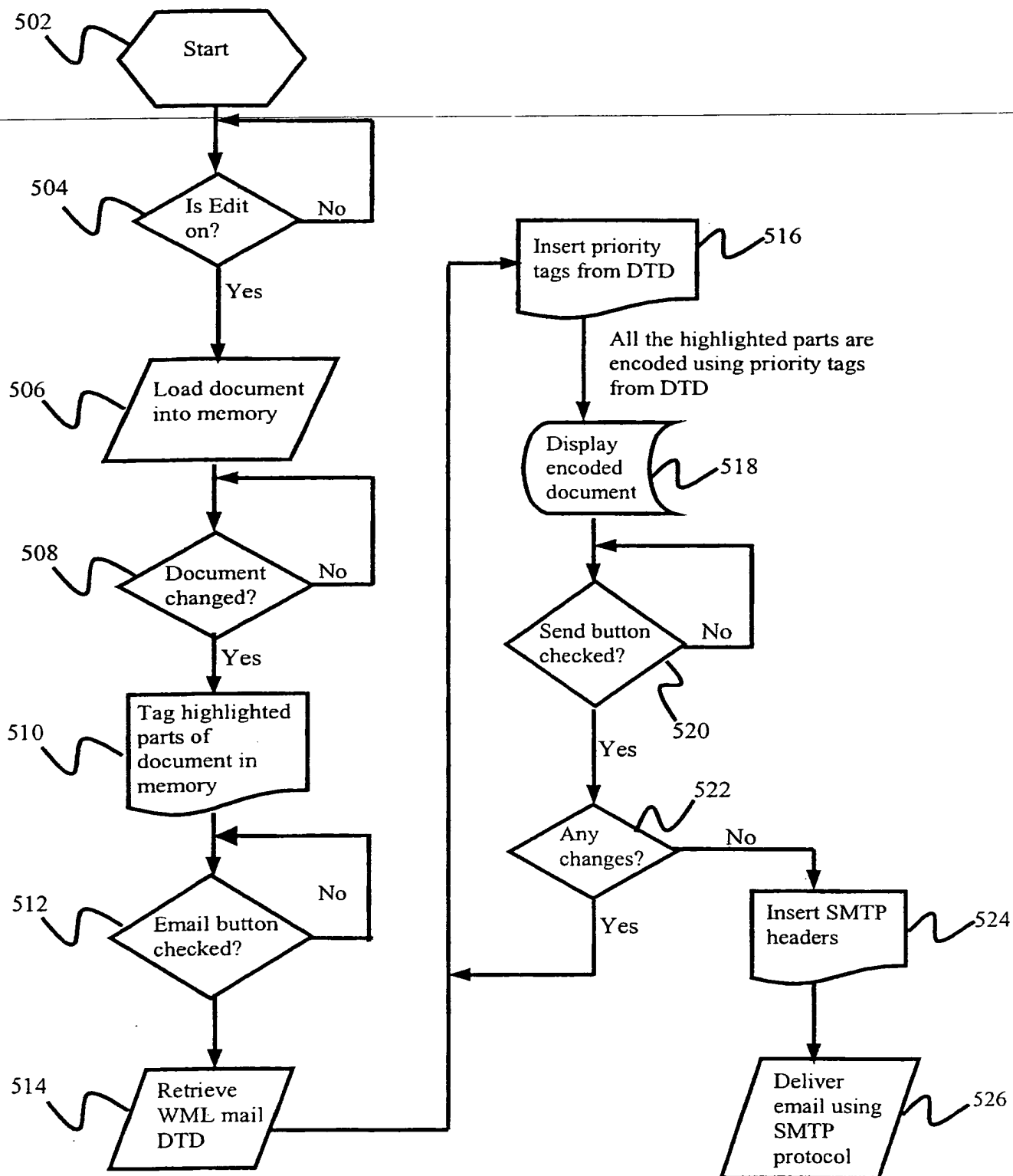


FIG. 5



## WAP GATEWAY extension for WML mail DTD handling

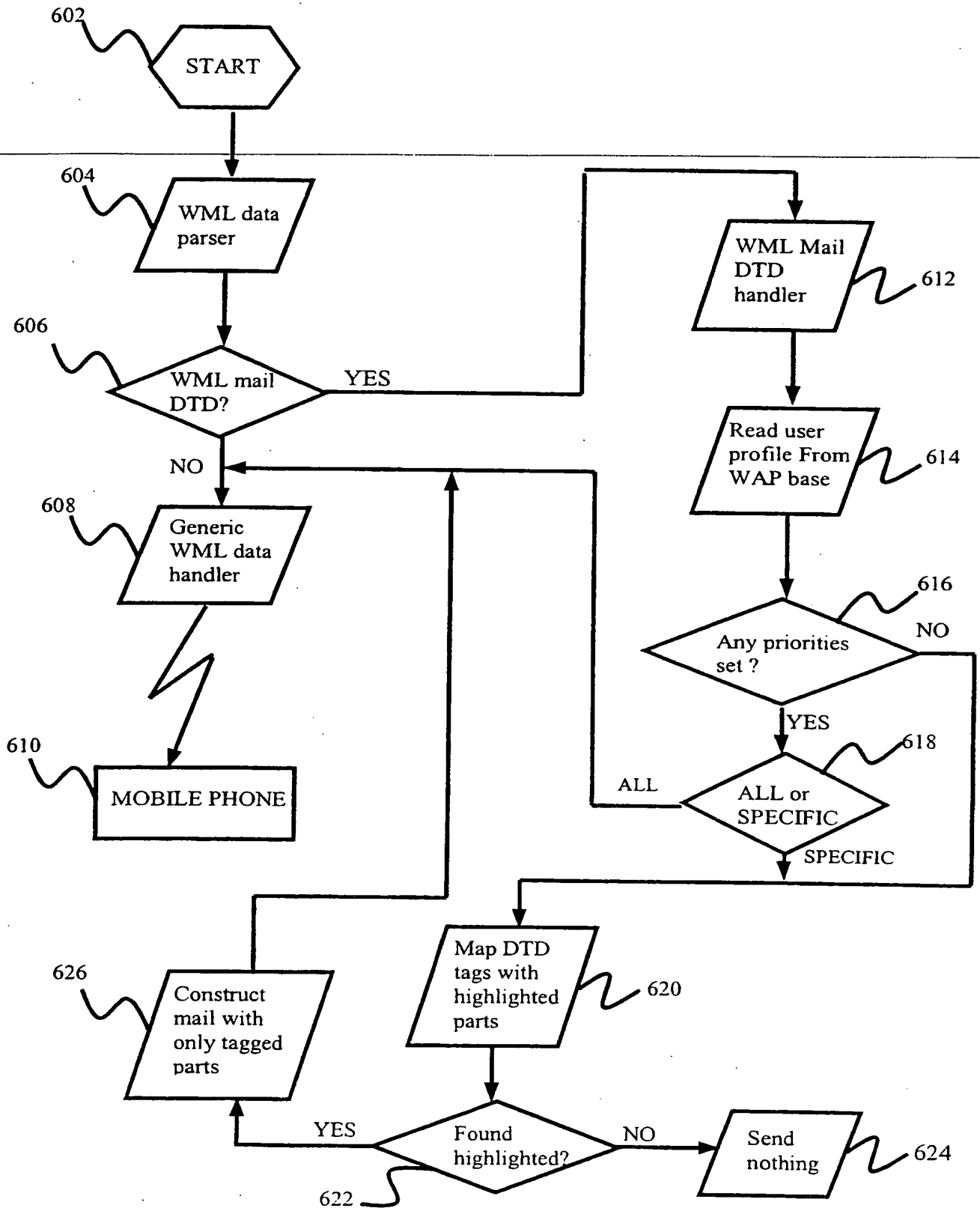


FIG. 6

## MOBILE PHONE extension for priority settings

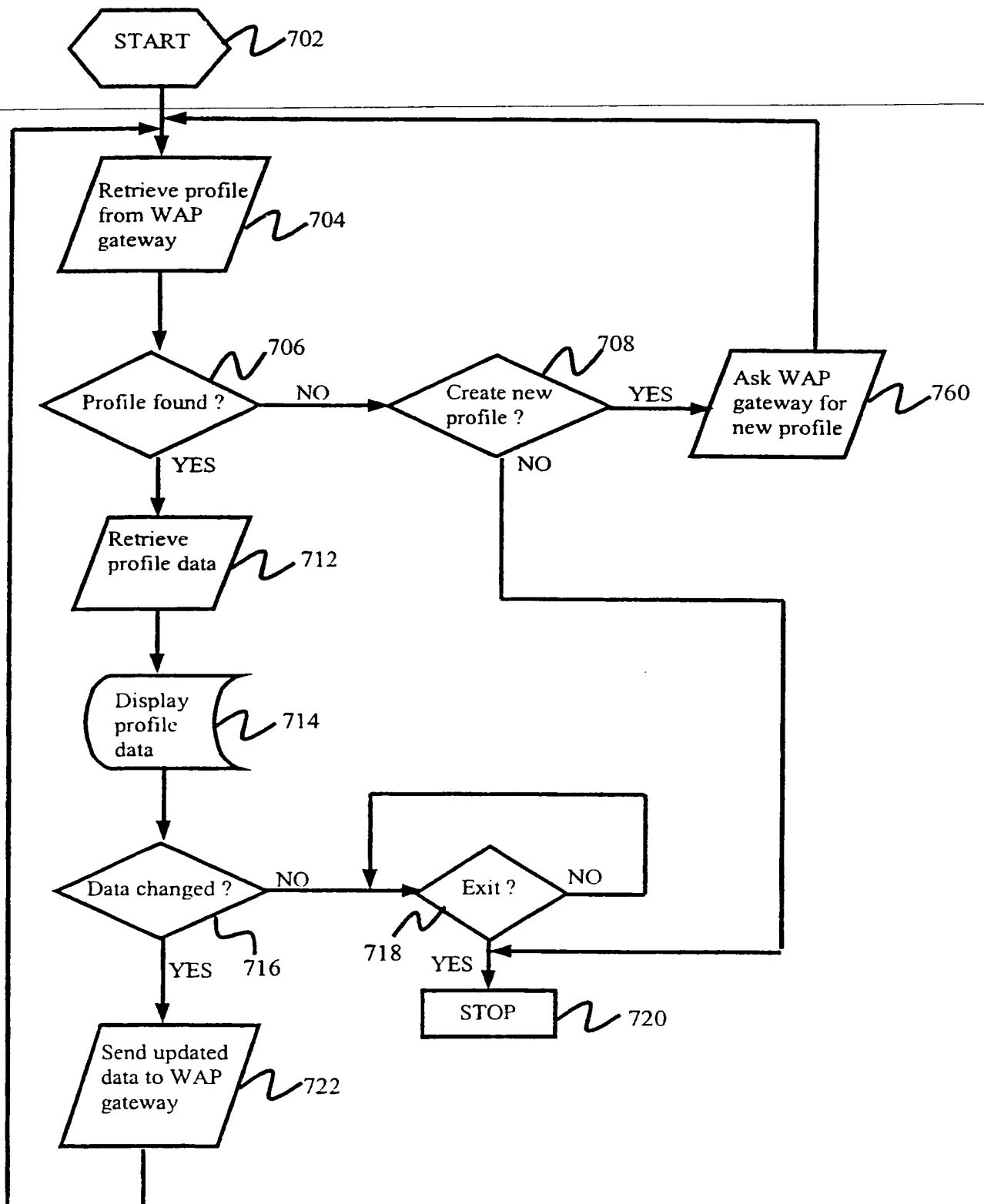


FIG. 7

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## WAP GATEWAY extension for priority settings

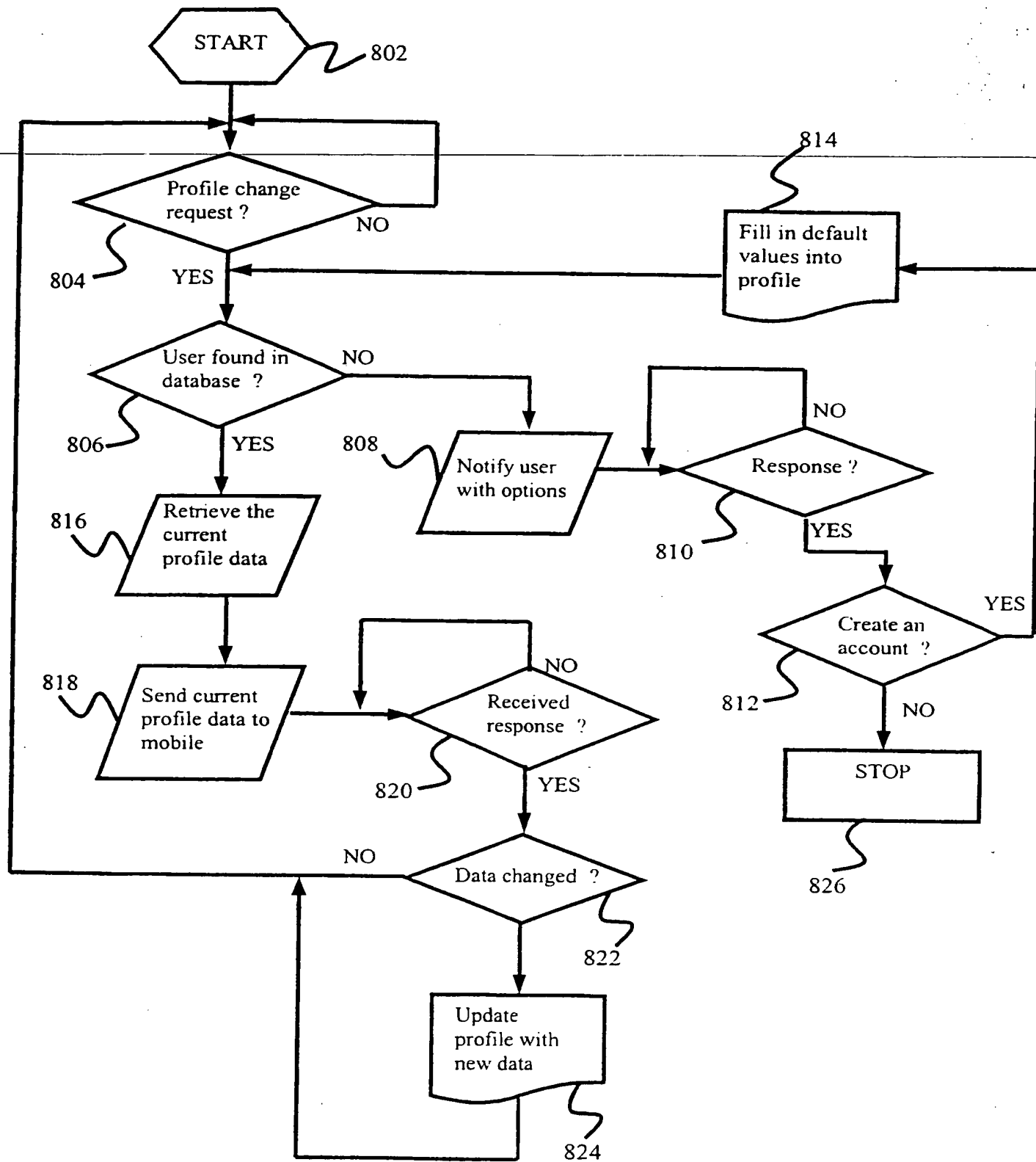


FIG. 8

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/SG 00/00041

## CLASSIFICATION OF SUBJECT MATTER

IPC<sup>7</sup>: H04Q 7/22, 7/32; G06F 17/30; H04L 29/06

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC<sup>7</sup>: G06F, H04B, H04L, H04M, H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, WPI

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	GB 2334648 A (TELEFONAKTIEBOLAGET L M ERICSSON) 25 August 1999 (25.08.99) abstract, figs. 1-3, page 3, line 24 - page 6, line 23, claims 1,5,6,11,19.	1,6,9,14
Y	EP 0908832 A2 (MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD) 14 April 1999 (14.04.99) abstract, figs. 1,3,6,13-15,19-22, paragraphs [0139] to [0160], claims 20,21.	1,6,9,14
A	EP 0932320 A2 (MOTOROLA, INC.) 28 July 1999 (28.07.99) abstract, figs. 2,3,5,6, paragraphs [0024] to [0026], claims 1,2.	17
A	EP 0772327 A2 (SHARP KABUSHIKI KAISHA) 7 May 1997 (07.05.97) abstract, figs. 1,3,11, column 5, lines 21-36, claims 1,3,4,6,7.	17
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☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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Date of the actual completion of the international search

23 October 2000 (23.10.2000)

Date of mailing of the international search report

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Name and mailing address of the ISA/AT

Austrian Patent Office

Kohlmarkt 8-10; A-1014 Vienna

Facsimile No. 1/53424/535

Authorized officer

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

national application No.

PCT/SG 00/00041

Patent document cited in search report			Publication date	Patent family member(s)			Publication date
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EP	A3	772327	17-02-1999				
EP	A2	908832	14-04-1999	CN	A	1220427	23-06-1999
EP	A3	908832	14-03-2001	JP	A2	11175515	02-07-1999
EP	A2	932320	28-07-1999	CN	A	1234694	10-11-1999
EP	A3	932320	10-05-2000	US	A	6157630	05-12-2000
GB	A1	2334648	25-08-1999	GB	A0	9802606	01-04-1998

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